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NOTICE OF ALLOWANCE AND FEE(S) DUE

68431 7590 08/22/2008

TIMOTHY N. ELLIS, PATENT ATTORNEY
8680 VIA MALLORCA
SUITE D
LA JOLLA, CA 92037

EXAMINER

TSAL SHENG JEN

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 08/22/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,542	02/13/2004	David Michael Shackelford	SJ0920030039US1	8989

TITLE OF INVENTION: METHOD AND SYSTEM FOR RESTORING DATA

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	11/24/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

68431 7590 08/22/2008
TIMOTHY N. ELLIS, PATENT ATTORNEY
8680 VIA MALLORCA
SUITE D
LA JOLLA, CA 92037

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/779,542 02/13/2004

David Michael Shackelford

SJO92003039US1

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TITLE OF INVENTION: METHOD AND SYSTEM FOR RESTORING DATA

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nonprovisional	NO	\$1440	\$300	\$0	\$1740	11/24/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSAL SHENG JEN	2186	711-170000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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68431	7590	08/22/2008	EXAMINER	
TIMOTHY N. ELLIS, PATENT ATTORNEY 8680 VIA MALLORCA SUITE D LA JOLLA, CA 92037			TSAL SHENG JEN	
			ART UNIT	PAPER NUMBER
			2186	
DATE MAILED: 08/22/2008				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 271 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 271 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/779,542

Examiner

SHENG-JEN TSAI

Applicant(s)

SHACKELFORD, DAVID MICHAEL

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/19/2008.
2. ☒ The allowed claim(s) is/are original claims 10 and 38-56.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Sheng-Jen Tsai/
TFSA Examiner, Art Unit 2186

DETAILED ACTION

1. This Office Action is taken in response to Applicants' Amendments and Remarks filed on April 19, 2008 regarding application 10/779,542 filed on February 13, 2004.
2. Claim 10 has been amended.
Claims 1-9 and 11-37 have been cancelled.
Claims 38-56 have been added.
Claims 10 and 38-56 are pending under consideration.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
4. Authorization for this examiner's amendment was given in a telephone interview with Timothy N. Ellis (Reg. No. 41,734) on 08/11/2008.

Please enter the amendments filed on 4/19/2008, and further amend independent claims **10**, **55** and **56**, and dependent claims **38-54** of this application as shown below:

It should be noted that the modifications (~~deletion denoted as strikethrough~~ and ~~addition denoted as underline~~, and both denoted with red color) presented in the following Examiner's Amendments are based on the amended claims filed on 4/19/2008.

5. **Claim 10 is now amended to be:**

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10. (currently amended) A ~~signal bearing~~ computer readable storage medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform operations for restoring data, the operations comprising:

tracking data access patterns for blocks of the data;

backing up the data;

wherein backing up the data includes storing with the data, data access pattern

metadata obtained by tracking the data access patterns;

receiving a request for at least a portion of the data;

creating a directory entry for the data in a virtual file system;

allocating storage space for the data;

initializing a block virtualization indicator to a value indicating that the data is not available;

writing a subset of the data to the storage space;

changing the block virtualization indicator to a value indicating that the data is available,

after a sufficient quantity of the data has been written to the storage space, wherein the

quantity of the data that has been written to the storage space that is sufficient is a

function of the access patterns of the data, and of a data type;

identifying if an application ~~performs~~ performing write that does not require a

read/modify/write on a block of the data that has not yet been restored requires a

read/modify/write operation; and if so,

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~~in response to identification that a read/modify/write operation is not required, marking the block of the data as discarded.~~

6. Claim 55 is now amended to be:

55. (new) A computing system, comprising:

a memory; and

a processing device coupled to the memory, wherein the processing device is programmed to perform operations for restoring data, the operations comprising:

tracking data access patterns for blocks of the data; backing up the data;

wherein backing up the data includes storing with the data, data access pattern metadata obtained by tracking the data access patterns;

receiving a request for at least a portion of the data;

creating a directory entry for the data in a virtual file system;

allocating storage space for the data;

initializing a block virtualization indicator to a value indicating that the data is not available;

writing a subset of the data to the storage space;

changing the block virtualization indicator to a value indicating that the data is available,

after only one block of the subset of the data has been written to the storage space;

identifying if an application ~~performs performing write that does not require a~~

~~read/modify/write~~ on a block of the data that has not yet been restored ~~requires a~~

~~read/modify/write operation; and if so,~~

~~in response to identification that a read/modify/write operation is not required, marking the block of the data as discarded.~~

7. Claim 56 is now amended to be:

56. (new) A method for restoring data, comprising the following operations:

tracking data access patterns for blocks of the data;

backing up the data;

wherein backing up the data includes storing with the data, data access pattern

metadata obtained by tracking the data access patterns;

receiving a request for at least a portion of the data;

creating a directory entry for the data in a virtual file system;

allocating storage space for the data;

initializing a block virtualization indicator to a value indicating that the data is not available;

writing a subset of the data to the storage space;

changing the block virtualization indicator to a value indicating that the data is available,

after a sufficient quantity of the data has been written to the storage space, wherein the

quantity of the data that has been written to the storage space that is sufficient is a

function of the access patterns of the data, and of a data type;

identifying if an application ~~performs performing write that does not require a~~

~~read/modify/write~~ on a block of the data that has not yet been restored ~~requires a~~

~~read/modify/write operation; and if so,~~

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in response to identification that a read/modify/write operation is not required, marking the block of the data as discarded.

8. **Claims 38-54 are now amended to be:**

Each of claims 38-54 recites "The signal bearing medium of claim ..."

All the recitations of "The signal bearing medium of claim ..." are now amended to be "The signal-bearing computer readable storage medium of claim ..."

Allowable Subject Matter

9. Claims 10 and 38-56 are allowed.

Conclusion

10. Claims 10 and 38-56 are allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheng-Jen Tsai whose telephone number is 571-272-4244. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sheng-Jen Tsai/

TFSA Examiner, Art Unit 2186

August 11, 2008